

## **2.2.5 Using pictures and drawings**

### **Introduction**

Pictures often say more than words. For this reason, easily understood and often self-explanatory symbols have been used for a long time on signs in public places such as railway stations, airports or sport venues. At a glance they show what is meant. Symbols or pictograms as well as anatomical images, cartoons, drawings or photos are being used increasingly in health information, making the statements and their contents easier for the readers to understand. The aim is for the contents to be understood better and quicker, to enable the written explanations to be remembered more easily and to contribute to making the information more satisfactory (1). Pictures may have an affective and/or cognitive effect and may be applied accordingly. Cognitive pictures such as pictograms or anatomical images are meant to supplement and explain the text. Affective pictures, such as photos of physicians or patients, should on the other hand evoke emotions and increase the attractiveness and credibility of the information given (1).

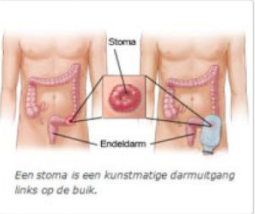

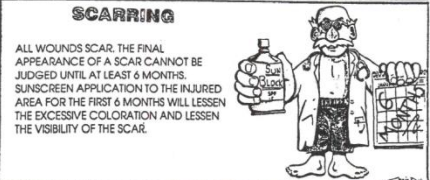


Supplementing information with pictures can contribute to better understanding (2). This is especially so for instructions (e.g. administering medications or measuring blood pressure). However, the presentation must always be clear and simple so that particularly people with a low standard of education or older people might profit from this (1-5).


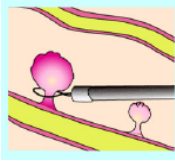

Pictograms (also called icons or symbols) are very simple, often schematic illustrations that are often used to ensure the correct dosage is given during drug treatment. In 2007 the *Institute of Medicine* (USA) issued a standard for labeling medications (6), which in the meantime is also being studied in Europe. With regard to the pictograms, a standardized, uniform presentation should be aimed for (6).

Apart from being used in health information, pictograms are also seen in occupational healthcare and safety as well as in public institutions with the intention of preventing accidents or as information about work protection measures. The efficacy of pictograms in particular with regard to medication intake has been scientifically investigated.

The following explanation show which recommendations can be given for using pictures in health information. The various formats have been categorized as follows: anatomical pictures, cartoons, photos, pictograms and illustrative drawings (cf. Table 16).

**Table 16:** Categories for pictures and drawings

<b>Anatomical images</b>										
 <p style="font-size: small;">Een stoma is een kunstmatige darmuitgang links op de buik.</p> <p>Bol, 2015 (1)</p>	 <p>Hollands, 2013 (7)</p>	<p>Anatomical images can be not only labeled drawings of anatomical structures (1) but also, for example, MRT images (7). They are used to illustrate a text, making it easier to understand. Online information uses these formats for individual risk communication to then make use of affective, particularly motivating effects (7).</p>								
<b>Cartoons</b>										
 <p>Delp, 1996 (8)</p>		<p>Cartoons are a form of illustration used to appeal to both adults and children. They are intended to increase interest in health information and thus enable better understanding (8).</p>								
<b>Photos</b>										
 <p>Bol, 2015 (1)</p>		<p>Photos, e.g. of doctors and/or patients, are used to evoke positive emotions and to increase the users' satisfaction with the information given (1).</p>								
<b>Pictograms</b>										
 <p>King, 2012 (3)</p>	<table border="1" style="font-size: x-small; text-align: center; width: 100%;"> <thead> <tr> <th>Morning</th> <th>Noon</th> <th>Evening</th> <th>Bedtime</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>1</td> <td style="background-color: black;"></td> </tr> </tbody> </table> <p>Sahm, 2012 (9)</p>	Morning	Noon	Evening	Bedtime	1	1	1		<p>Pictograms, icons and symbols are simple, often schematic graphic presentations that are often used to ensure the correct dosage and administration of medications (3, 5, 9-11).</p>
Morning	Noon	Evening	Bedtime							
1	1	1								


Drawings			
 <p><b>3.</b></p>			<p>Various forms of illustrations are embraced under the expression “drawings”. Sometimes they cannot be distinguished from other formats but differ with regard to the degree of abstraction, scope or context. They are used to visualize instructions (12, 14), to explain medical concepts (4) and to improve the understanding of benefit-risk communication (13, 15).</p>
<p>Austin, 1995 (12)</p>	<p>Brotherstone, 2006 (13)</p>	<p>Liu, 2009 (4)</p>	

## Questions

1. What effects do anatomical images in health information have compared with text only?
2. What effects do cartoons in health information have compared w with text only?
3. What effects do photos in health information have compared with text only?
4. What effects do pictograms in health information have compared with text only?
5. What effects do illustrative drawings in health information have compared with text only?

## Recommendations

### 1. Anatomical images

	<p><b>Recommendation</b></p> <p><b>“Anatomical images may be used to supplement a text.”</b></p> <p>Agreed: 9, Disagreed: 0, Abstentions: 1</p> <p><b>Quality of the evidence:</b> moderate quality</p>
<p><b>Comment on the recommendation:</b></p> <p>The recommendation refers to the comparison of text supplemented by anatomical images with text only.</p> <p>In this comparison, one study showed no effect for the cognitive outcomes <i>knowledge</i> and <i>comprehensibility / readability</i>. A positive effect for using anatomical images was found in one study each for the affective outcomes <i>acceptance / attractiveness</i> and <i>trust / credibility</i>.</p>	

### Summary of the findings


#### Characteristics of the included studies

In this comparison two studies were included. In a study in the Netherlands, 143 bowel cancer patients with an average age of 68 years were investigated (1). The intervention consisted of anatomical images about an endoscopic method of operation and about how to insert a stoma. An online study in Great Britain (n=901, average age 27 years) showed the effect of using MRT images to supplement personalized details concerning cardiovascular risk (7).

#### Results for the relevant outcomes

For the outcomes *knowledge* and *understanding* no effect was shown when anatomical images were used in health information (1). Positive effects were shown for the outcomes *acceptance / attractiveness* when anatomical images were used (1, 7).

## 2. Cartoons

	<p><b>Recommendation</b></p> <p><b>“Cartoons may be used to supplement a text.”</b></p> <p>Agreed: 9 Disagreed: 0, Abstentions: 1</p> <p><b>Quality of the evidence:</b> high quality</p>
<p><b>Comment on the recommendation:</b></p> <p>The recommendation refers to the comparison of text supplemented by cartoons with text only.</p> <p>In this comparison, positive effects for using cartoons could be shown in a single study with regard to the cognitive outcomes <i>understanding</i> and <i>comprehensibility / readability</i> as well as to the affective outcomes <i>acceptance / attractiveness</i>.</p>	

### Summary of the findings

#### Characteristics of the included studies

For this comparison a single study was included that had been carried out in a clinic in the USA with 205 young adults (average age 21 years) who had been to the A&E for wound treatment (8). The intervention consisted of instruction in the care of wounds that was illustrated by a cartoon.

#### Results for the relevant outcomes

A positive effect for using illustrative cartoons was found for the outcomes *understanding, comprehensibility / readability* and *acceptance / attractiveness* (8).

### 3. Photos

	<p><b>Recommendation</b></p> <p><b>“No recommendation can be made for the use of photos.”</b></p> <p>Agreed: 10, Disagreed: 0, Abstentions: 0</p> <p><b>Quality of the evidence:</b> moderate quality</p>
<p><b>Comment on the recommendation:</b></p> <p>For the comparison of text supplemented by photos with text only no recommendation can be made.</p> <p>In a single study, no effects could be shown for the outcomes <i>knowledge</i> and <i>comprehensibility / readability</i> or for the affective outcomes <i>acceptance / attractiveness</i>. The huge heterogeneity of photos and their applicability makes the transferability of these results disputable.</p>	

### Summary of the findings

#### Characteristics of the included studies


A single study was included for this comparison in which 143 patients with bowel cancer and an average age of 68 years were examined in the Netherlands (1). The intervention consisted of information concerning an endoscopic operating method that was supplemented by affective illustrations in the form of photos showing professional staff (e.g. physicians or nurses) with and without patients.

#### Results for the relevant outcomes

For the outcomes *knowledge*, *comprehensibility* and *acceptance / attractiveness* no effect was shown for the use of supplementary photos (1).



## 4. Pictograms

	<p><b>Recommendation</b></p> <p><b>“Pictograms may be used to supplement a text.”</b></p> <p>Agreed: 9, Disagreed: 0, Abstentions: 1</p> <p><b>Quality of the evidence:</b> moderate quality</p>
<p><b>Comment on the recommendation:</b></p> <p>The recommendation refers to the comparison of an informative text supplemented by pictograms (icons, symbols) with the informative text only.</p> <p>For this comparison positive effects for using pictograms could be seen for the cognitive outcomes <i>understanding</i> (in two out of three studies), <i>knowledge</i> (in one out of four studies) and <i>comprehensibility / readability</i> (in one out of two studies). In the other studies no effects were found for the cognitive outcomes, but for the affective outcomes <i>acceptance / attractiveness</i> positive effects were found for the use of pictograms in two studies.</p>	

### Summary of the findings


#### Characteristics of the included studies

For this comparison five studies with a total of 661 participants were included, who were mostly adults between 20 and 40 years of age from the USA (3, 10, 11), Canada (10), Ireland (9) and South Africa (5). Three studies included in particular people with a low standard of education (3, 5, 10) or where English was their second language (5). In all of the studies the intervention consisted of an instruction about correct administration and dosing of medications, illustrated with pictograms with varying degrees of schematization.

#### Results for the relevant outcomes

For the outcomes *understanding*, *knowledge* and *readability* no clear effect could be seen for supplementary pictograms (3, 5, 9-11), but for the outcomes *acceptance / attractiveness* a positive effect was found for using supplementary pictograms (5, 10).

## 5. Illustrative drawings

	<p><b>Recommendation</b></p> <p><b>“Illustrative drawings can be used to supplement a text.”</b></p> <p>Agreed: 9, Disagreed: 0 Abstentions: 1</p> <p><b>Quality of the evidence:</b> moderate quality</p>
<p><b>Comment on the recommendation:</b></p> <p>The recommendation refers to the comparison of text supplemented by illustrative drawings with text only.</p> <p>For this comparison a positive effect for using illustrative drawings was seen in two out of four studies with regard to the cognitive outcome <i>understanding</i>. In the other two studies either no effect or no clear effect was found. Regarding the cognitive outcomes <i>knowledge</i> and <i>readability</i> no effect could be seen in one respectively two studies. No studies concerning the affective outcomes could be included.</p>	

## Summary of the findings

### Characteristics of the included studies

For this comparison five studies were included that had a certain heterogeneity (4, 12-15). The interventions consisted of health information on various subjects (i.e. a guide for inhalation or wound treatment, screening, risks of operations) that had been supplemented by illustrative drawings. The term “drawings” here combines different types of illustrations that sometimes cannot be clearly differentiated from cartoons, pictograms or anatomical images. They were used to visualize instructions (12, 14), to illustrate medicinal concepts (4) and to improve understanding for benefit-risk communication (13, 15). A total of 372 participants with an average age between 20 and 72 years took part and included patients of both sexes (12, 15) as well as healthy people. The investigations were carried out in the USA (4, 12), Canada (15), Great Britain (13) and in the Netherlands (14). One study (15) examined particularly the effect depending on the level of education and in a further study the age of the participants was focused on (4).

## Results for the relevant outcomes

For the outcomes understanding, knowledge and comprehensibility / readability no effect or no clear effect was seen for using illustrative drawings (12, 13). No results are available concerning the affective outcomes.

### ***Research needs***

On the whole, no clear recommendations could be made with regard to pictures and drawings. For three of the five questions, only one study for each question could be included so it was not possible to generalize the findings. Precisely because of the diversity of the representations, further studies will be required on the various forms of presentation, especially with regard to the effect of photos. In addition, it should be examined to what extent photos can have a persuasive effect. This aspect seems to be important because photos are used purposely because of their affective impact (1).

## Evidence tables

Table 17: Evidence table „Text with anatomical images versus text only“

Certainty assessment						Summary of findings				
						No. of participants per group		Effect estimates		
Outcomes [No. of studies]	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Intervention	Control	Effects	Quality of evidence	Importance
<b>Text with anatomical images versus text only</b>										
<b>Knowledge [n=1]</b> Bol (1)	RCT	serious (-1)	not serious	not serious	not serious	N= 73	N= 70	In one study no effect (1).	moderate	critical
<b>Comprehensibility / readability [n=1]</b> Bol (1)	RCT	serious (-1)	not serious	not serious	not serious	N= 73	N= 70	In one study no effect (1).	moderate	important but not critical
<b>Acceptance / attractiveness [n=2]</b> Bol (1)	RCT	serious (-1)	not serious	not serious	not serious	N= 73	N= 70	In one study effect for anatomical images (1).	moderatet	limited importance
<b>Trust / credibility [n=1]</b> Hollands (7)	RCT	not serious	not serious	not serious	not serious	N= 450	N= 451	In one study a small effect for anatomical images (7).	high	limited importance

**Table 18:** Evidence table „Text with cartoons versus text only“

Certainty assessment						Summary of findings				
						No. of participants per group		Effect estimates		
Outcomes [No. of studies]	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Intervention	Control	Effects	Quality of evidence	Importance
<b>Text with cartoons versus text only</b>										
<b>Understanding</b> [n=1] Delp (8)	RCT	not serious	not serious	not serious	not serious	N= 103	N= 102	In one study effect for cartoons (8).	high	critical
<b>Comprehensibility / readability</b> [n=1] Delp (8)	RCT	not serious	not serious	not serious	not serious	N= 103	N= 102	In one study effect for cartoons (8).	high	important but not critical
<b>Acceptance / attractiveness</b> [n=1] Delp (8)	RCT	not serious	not serious	not serious	not serious	N= 103	N= 102	In one study effect for cartoons (8).	high	limited importance

**Table 19:** Evidence table „Text with photos versus text only“

Certainty assessment						Summary of findings				
Outcomes [No. of studies]	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants per group		Effect estimates		
						Intervention	Control	Effects	Quality of evidence	Importance
<b>Text with photos versus text only</b>										
<b>Knowledge [n=1]</b> BoI (1)	RCT	serious (-1)	not serious	not serious	not serious	N= 73	N= 70	In one study no effect (1).	moderate	critical
<b>Comprehensibility / readability [n=1]</b> BoI (1)	RCT	serious (-1)	not serious	not serious	not serious	N= 73	N= 70	In one study no effect (1).	moderate	important but not critical
<b>Acceptance / attractiveness [n=1]</b> BoI (1)	RCT	serious (-1)	not serious	not serious	not serious	N= 73	N= 70	In one study no effect (1).	moderate	limited importance

**Table 20:** Evidence table „Text with pictograms versus text only”

Certainty assessment						Summary of findings				
Outcomes [No. of studies]	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants per group		Effect estimates		
						Intervention	Control	Effects	Quality of evidence	Importance
<b>Text with pictograms versus text only</b>										
<b>Understanding [n=1]</b> Mansoor (5) Thompson (10) Yin (11)	RCT	serious (-1)	not serious	not serious	not serious	N= 237	N= 222	In two studies effects for pictograms (5, 11), in one study no effect (10).	moderate	critical
<b>Knowledge [n=4]</b> King (3) Mansoor (5) Sahm (9) Thompson (10)	RCT	very serious (-2)	not serious	not serious	not serious	N= 136 + N=94 (total, random allocation on three groups)	N= 132	In one study effect for pictograms (5), in three studies no effects (3, 9, 10).	low	critical
<b>Comprehensibility / readability [n=2]</b> Mansoor (5) Thompson (10)	RCT	serious (-1)	not serious	not serious	not serious	N= 82	N= 78	In one study effect for pictograms (5), in one study no effect (10).	moderate	important but not critical
<b>Akzeptanz / Attraktivität[n=2]</b> Mansoor (5) Thompson (10)	RCT	serious (-1)	not seriouscritical	not serious	not serious	N= 82	N= 78	In two studies effects for pictograms (5, 10).	moderate	limited importance

**Table 21:** Evidence table „Text with illustrative drawings versus text only“

Certainty assessment						Summary of findings				
Outcomes [No. of studies]	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	No. of participants per group		Effect estimates		
						Intervention	Control	Effects	Quality of evidence	Importance
<b>Text with illustrative drawings versus text only</b>										
<b>Understanding [n=4]</b> Austin (12) Brotherstone (13) Kools (14) Liu (4)	RCT	serious (-1)	serious (-1)	not serious	not serious	N= 162	N= 159	In two studies effects for drawings (12, 13), in one study no clear effect (14), in one study no effect (4).	low	critical
<b>Knowledge [n=1]</b> Henry (15)	RCT	very serious (-2)	not serious	not serious	not serious	N= 23	N= 28	In one study no effect (15).	low	critical
<b>Comprehensibility / readability [n=2]</b> Kools (14) Liu (4)	RCT	serious (-1)	not serious	not serious	not serious	N= 78	N= 77	In two studies no effects (4, 14).	moderate	important but not critical



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